

### **ABSTRACT OF THE DISCLOSURE**

Disclosed are multi-channel PWM (Pulse Width Modulation) apparatuses and methods for modulating PCM-based multi-channel audio signals read from an optical medium into PWM-based multi-channel audio signals. A multi-channel PWM apparatus and method can reduce noise from amplifying PCM-based audio signals having adjacent signal processing paths. The multi-channel PWM apparatus and method selectively vary only gains of some channels in a plurality of channels in order to allow an audio signal applied to a pulse width modulator to have a different level in individual channels in a prescribed system condition (e.g., overload). The multi-channel PWM apparatus can selectively enable a subset among a plurality of pulse width modulators to reduce unnecessary driving and noise. Thus, preferred embodiments can reduce or prevent deterioration of output audio signals.